Larkman Nunatak (LAR) 06638

Anorthositic breccia

5.29 g

Figure 1: Photo of LAR 06638 as discovered in the Larkman Nunatak region of Antarctica in 2006.

Introduction

Larkman Nunatak (LAR) 06638 (Fig. 1) is a small feldspathic breccia discovered in the TransAntarctic Mountains in 2006 (Fig. 2). The original lab description of the sample reads: "The bottom exterior surface has black fusion crust, while the top has a lighter brown crust. Polygonal fractures are present. The gray and white matrix has a sharp line where matrix becomes black with white inclusions." This sharp line is visible in the lab processing photos taken at JSC (Fig. 3).

Petrography

The thin section reveals the feldspar-rich nature of this meteorite (Fig. 4). Also from the AMN newsletter: "The section shows a groundmass of comminuted pyroxene, olivine and plagioclase with grain sizes up to 1 mm. Clasts up to 2 mm include basalts, granulites and anorthosites. One-half of the section exhibits a darkened matrix. Olivine is Fa_{28-33}, pyroxene ranges from $Fs_{27-39}Wo_{3-12}$ (Fe/Mn ~ 60), and plagioclase An_{93-98}. The meteorite is lunar, probably an anorthositic regolith breccia."

Chemistry

Several subsplits of LAR06638 have been analyzed by INAA, showing that this sample is one of the most feldspathic lunar meteorites with 3.9 wt% FeO, 6.7 ppm Sc, 560 ppm Cr, 270 ppm Ni, and 0.4 ppm Th (Korotev et al., 2008).

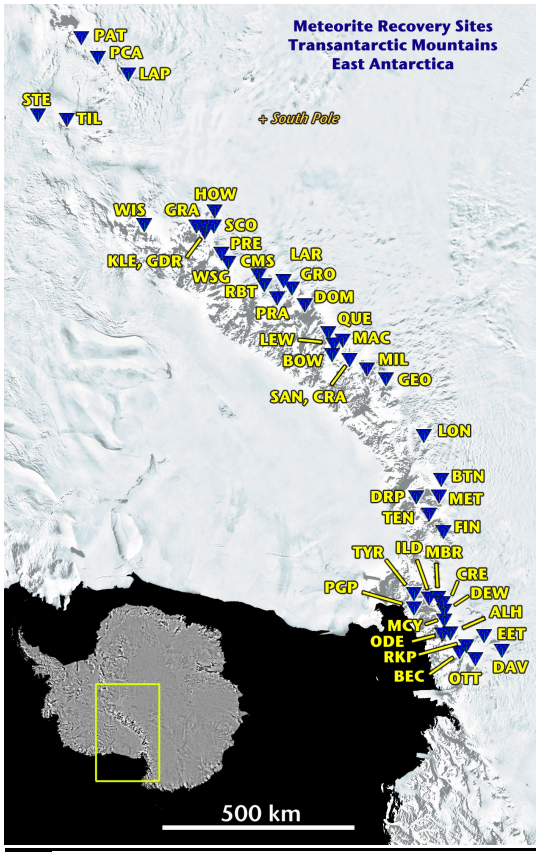

Figure 2: Location map of the ANSMET program showing the Larkman Nunatak region (LAR) just below the South pole marker.

Radiogenic age dating
None yet reported.

Cosmogenic isotopes and exposure ages
None yet reported.

Figure 3: JSC lab photo of LAR 06638 with 1 cm cube and scale bars below.

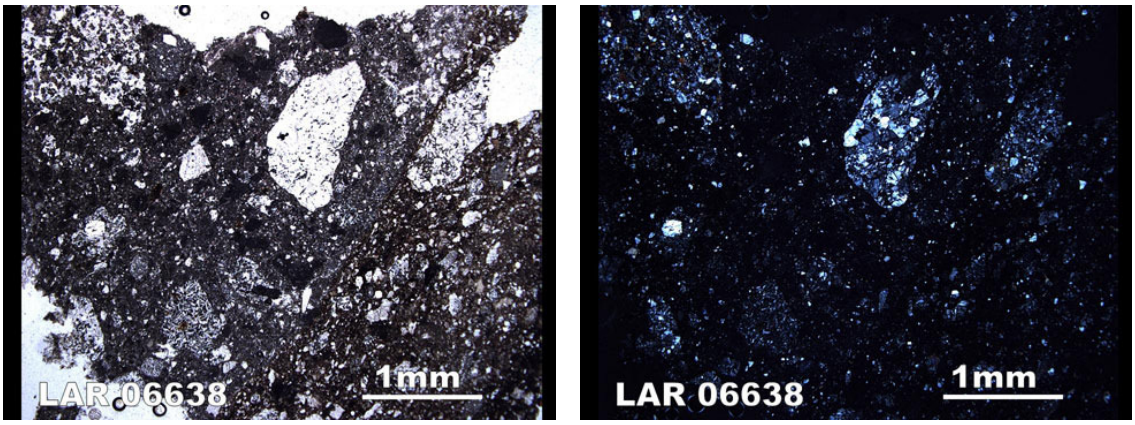

Figure 4: LAR 06638 in plane polarize light (left) and cross nicols (right), illustrating the feldspathic nature of the clasts and matrix.

K. Righter, Lunar Meteorite Compendium, 2010